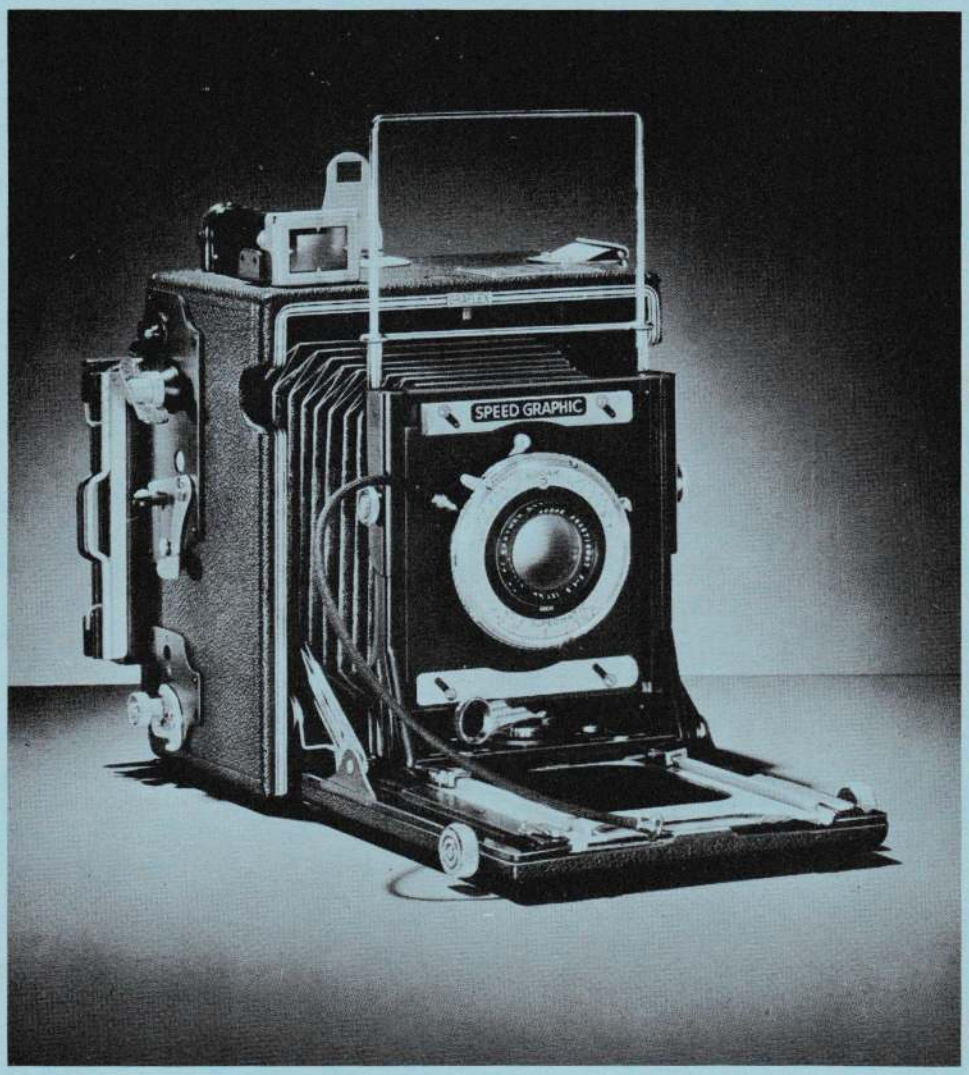
Section 2

3 1/4 X 4 1/4 ANNIVERSARY SPEED GRAPHIC



Bellows: 2 7/16 in. min. to 12 in. max.

Lensboard: 3 1/4 in. square, Model A. (Cat. No. 9201)

Lens limit: 2 3/8 in. max. dia. of rear element
1 1/2 in. forward from lensboard to closed bed

GRAFLEX, INC.
Rochester 8, New York

CONTENTS OF SECTION 2

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Optical Viewfinder - Refer to Section 102

Miscellaneous Parts

Special precautions for:

1. Bellows
2. Peepsight - folding
3. Idler Lubrication
4. Bed catch

1. Bellows (#17582).

Removal

a. Remove the back, set the curtain at "0", remove the seven #2 x 3/8" flat head side screws (#150B2-12) of the idler frame (#17585) and the inside frame (#15783).

b. Pry up 10 metal clip ears of the rear bellows frame and remove the bellows and front standard from the front of the camera.

c. Working inside the bellows, remove 4 screws (#19640) which secure the front bellows frame to the lensboard frame.

Replacement

d. With the seam down, assemble the 4 screws which secure the front bellows frame to the lensboard frame. Then, position the rear bellows frame and crimp the bellows tabs to the inside camera plate.

e. Replace the inside frame, idler frame, straighten the curtain and reassemble the back.

2. Folding Peepsight (#22513).

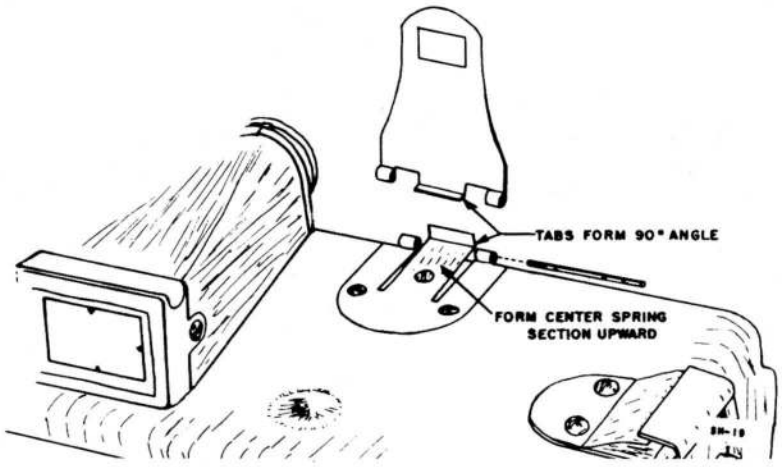
This peepsight is used with front wire finder (#22505) which has a slide bushing 2-3/16" long. To remove excess play from the peepsight, remove the hinge pin, reform each of the right angle tabs to form 90 degrees, and from the center section of the base plate upward about 1/32 inch above the outside section. Reassemble.

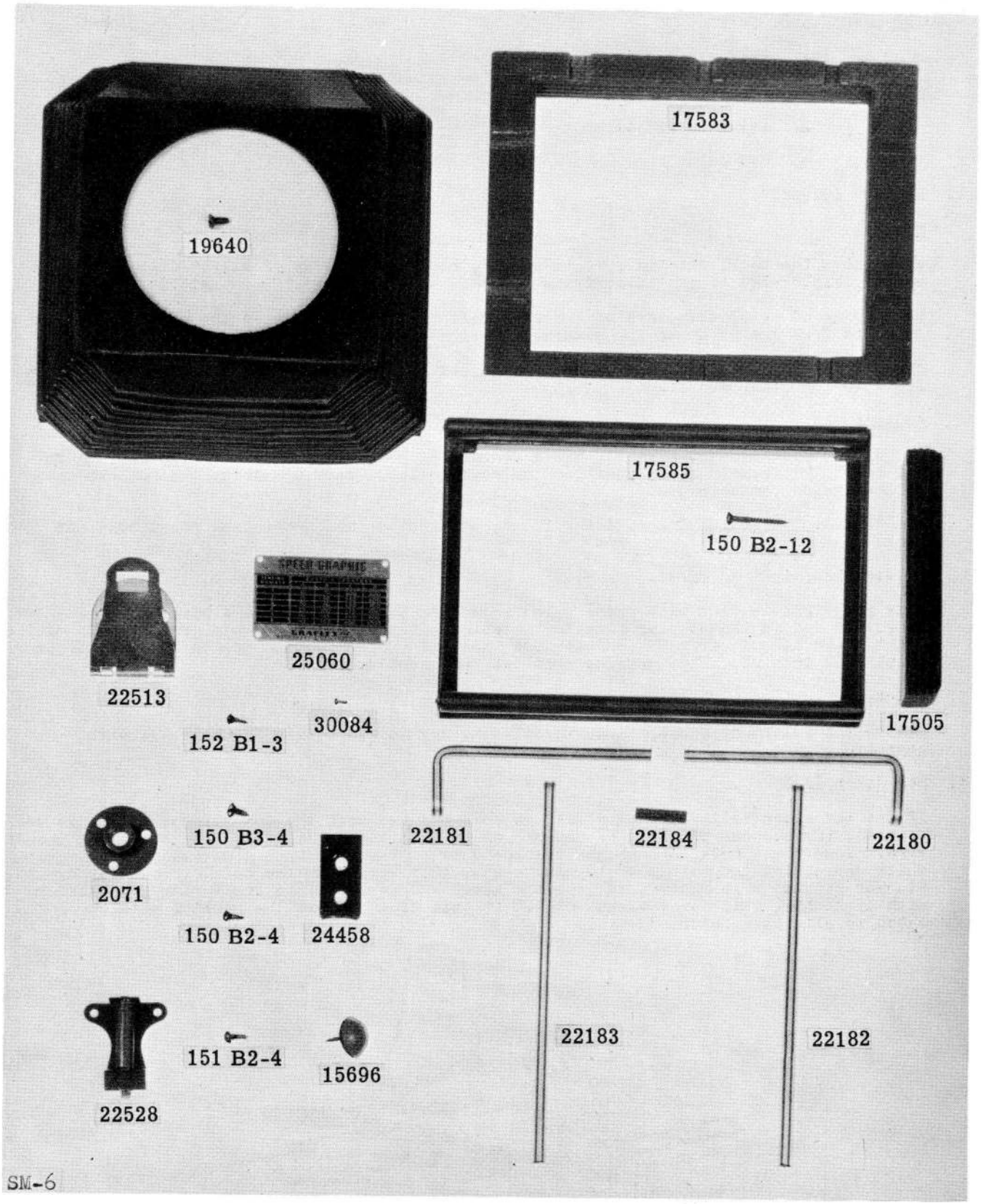
3. Idler Lubrication.

Remove the idler and frame, clean in solvent, dry and lubricate the bearings with graphite grease.

4. Bed Catch (#22528).

If the bed catch (#22528) should fail to open the bed when the top release button is depressed, the bed can possibly be eased open by inserting a piece of very stiff "L" shaped wire. Insert the hook through the crack and twist the wire hook down against the catch while depressing the button -- in many cases, this will open the bed. If the catch plunger sticks or is rusted, replace the catch and/or lubricate the spring and plunger with light oil, (wipe away excess oil). At this time, adjust the hooking portion of the catch to eliminate future jamming.




19640
17583
17585
150 B2-12
17505
22513
SPEED GRAPHIC
25060
30084
152 B1-3
22181
22184
22180
150 B3-4
2071
150 B2-4
24458
22183
22182
151 B2-4
15696
22528
SM-6

3¼ x 4¼ ANNIVERSARY SPEED GRAPHIC

			List Price
	Miscellaneous Camera Body Parts		
150 B2-4	Screw - Side tripod bushing to body	(1/4" #2 FH L12)	$ .03
150 B2-~~12~~ 4	Screw - Idler frame to body	(1/4" #2 FH S18)	.03
150 B3-4	Screw - bed stop to body	(1/4" #3 FH L17)	.01
151 B2-4	Screw - bed catch to body	(1/4" #2 RH L17)	.03
152 B1-3	Screw - folding peepsight to body	(3/16" #0 OH P19)	.03
2071	Nut - side tripod bushing	(use screw 150 B2-4)	.15
15696	Foot - camera body		.03
17505	Block - idler frame securing		.15
17582	Bellows	(use front frame screw 19640)	6.50
17583	Frame - inside	(use screw 150 B2-12)	1.60
17585	Idler frame assembly	(use screw 150 B2-12)	1.90
1946	Frame for idlers		.85
17584	Idler		.85
19640	Screw - bellows to front frame	(3/16" #2 FH, Z, Parker Kalon)	.01
22180	Moulding - top left		.60
22181	Moulding - top right		.60
22182	Moulding - lower left		.60
22183	Moulding - lower right		.60
22184	GRAFLEX name plate - front moulding	(Order Replacement)	See below
22513	Peepsight finder - folding	(use with wirefinder 22505)	1.15
22528	Bed catch assembly	(use screw 151 B2-4)	.75
24458	Stop - bed	(use screw 150 B3-4)	.10
25060	Plate - shutter speed	(use pin 30084)	.15
30084	Pin (tack) - shutter plate to body		.01

Substitute Replacement Parts

Parts as listed	Order as Replacements	
22184	30640-P2 Nameplate	.10

Order by part number and complete name. State quantity.

Prices are subject to change without notice.

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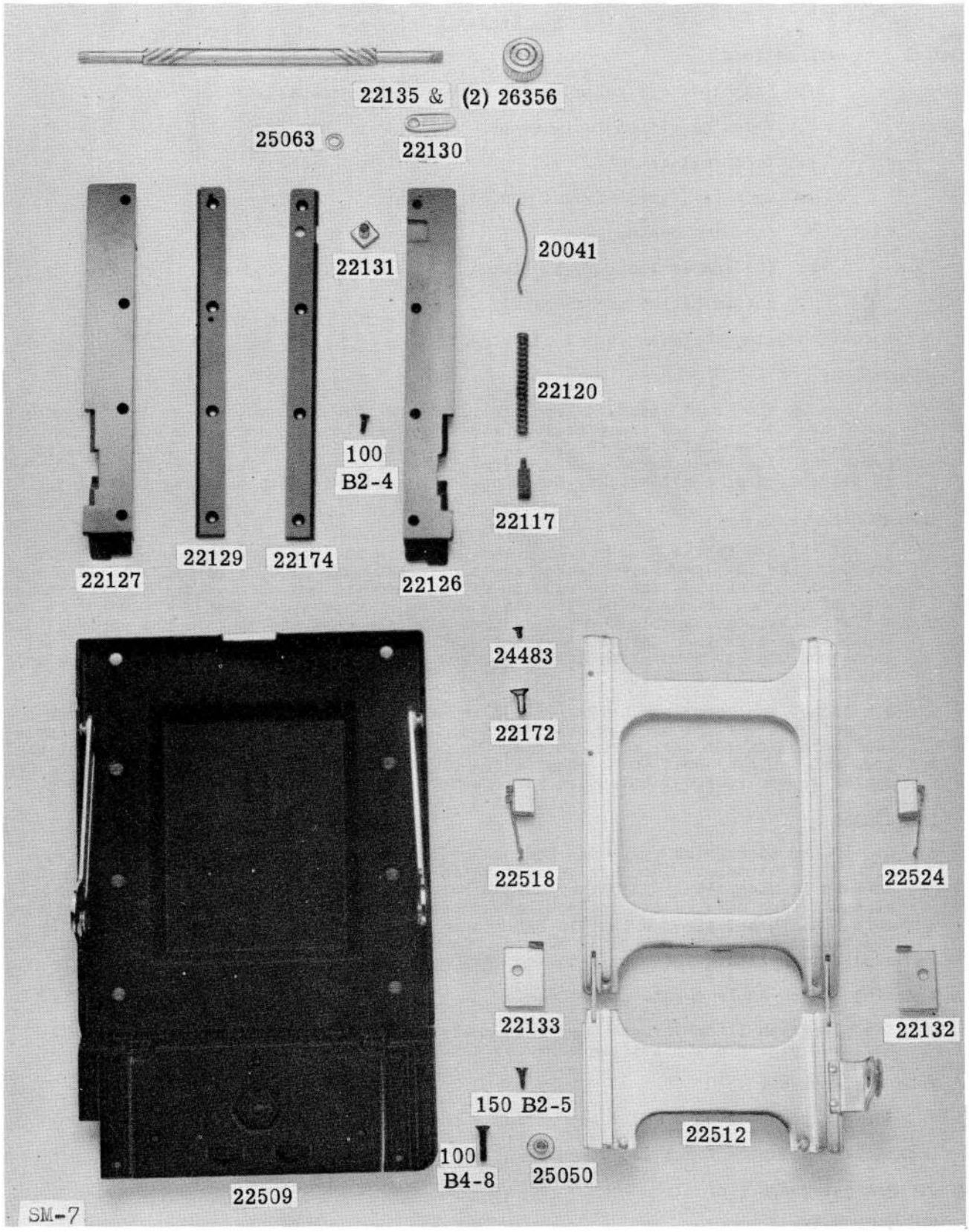
22135 &
(2) 26356
25063
22130
22131
20041
22120
100
B2-4
22117
22127
22129
22174
22126
24483
22172
22518
22524
22133
22132
150 B2-5
100
B4-8
25050
22512
22509
SM-7

			List Price
22522	BED ASSEMBLED COMPLETE	(Includes nineteen items below)	$31.50
100 B2-4	Screw - Yoke guide	(1/4" 2-56 FH L5)	.02
20041	Spring - Focus pinion shaft		.03
22117	Plunger brace spring		.10
22120	Spring - Bed brace plunger		.05
22126	Block - Right bed		.40
22127	Block - Left bed		.40
22129	Guide - Left bed yoke		.75
22130	Lever - Yoke lock		.25
22131	Screw - Lock		.20
22132	Stop - Right yoke		.05
22133	Stop - Left yoke		.05
22135	Focusing pinion shaft	(Order 2 knobs 26356)	2.60
22157	Covering	(not illustrated)	1.00
22172	Bushing - Yoke guide screw		.01
22174	Guide - Right bed yoke		.75
22509	Bed and hinge		5.75
22512	Yoke assembly		11.00
25063	Washer - Yoke lock spacer	(As required) (Order replacement)	See below
26356	Knob - Focusing		.25
22518	Stop - Left infinity		.80
22524	Stop - Right infinity		.80
100 B4-8	Screw - Yoke guide to body	(1/2" 4-40 FH L5)	.05
150 B2-5	Screw - Bed hinge to body	(5/16" #2 FH L12)	.03
24483-P2	Screw - Focus scale		.05
25050	Washer - Yoke guide screw		.03
152 B2-4	Screw - Side arm plate to body	(1/4" #2 OH L17)	.01
22147	Plate - Right side for bed arm brace		.30
22148	Plate - Left side for bed arm brace		.30

SUBSTITUTE REPLACEMENT PARTS

Parts as listed	Order as Replacement	
25063	30473-P11 Washer - Yoke lock (As required)	.01

Order by part number and complete name. State quantity.

Prices are subject to change without notice.

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6. Bed Inspection Check List.

a. Note focusing pinion action, for bind or grate	Check straightness, clean and lubricate
b. Note side play and alignment as the case yoke engages the bed section	See paragraph 1 d.
c. Lock lever	See paragraph 1 c.

7. Bottom Tripod Socket Repair.

a. If the bottom tripod socket has broken free, remove the bed from the camera body. It will be necessary to remove the side arm brace plates, three #2 x 5/16" flat head screws, part #150 B2-5, from the inside and four #4-40 x 1/2" flat head screws, part #100B4-4 from the bottom.

b. Level the broken hinge emboss (file or peen smooth).

c. Position a side tripod nut (#2071) (see page 2A). Cut a plate about 3/4" diameter and drill three 1/8" holes to correspond to the three holes in the nut flange. Lay the plate over the nut and assemble to the camera body with three #2 x 1/4" round head screws (#151 B2-4).

d. Reassemble the bed and check with paragraph 6.

Front Complete and Handle

Special precaution:

1. Lensboard frame and slide locks.
2. Lock lever and lateral shift lock spring replacement and adjustment.
3. Wirefinder.
4. Handle.

1. Lensboard frame and slide locks.

The lensboard frame (#22149) is secured to the bellows from the inside by four #2 flat head Parker Kalon screws (#19640).

The slide locks (#21954 and #21955) should be lubricated by wiping the back with a wax base lubricant.

2. Lock lever and lateral shift lock spring replacement and adjustment.

The lateral shift lock spring (#22176) is secured to the bottom of the standard by a #1/4-24 x 3/8" hexnut (#22108). Note the screwslot - do not move unless the lock tension is to be changed.

The lock lever (#22501) is secured by the hexnut on the bottom and threaded through the standard. When reassembling, lay the two lock balls (#22104) in their sockets, first assemble the spring washer (#22185) over the lock lever screw, then, assemble the flat washer (#22186) over the screw and thread through the standard. Replace the shift spring, locknut, test the locking action on the bed. To tighten the lock, loosen the locknut on the bottom side and turn the screw in a counterclockwise direction, to loosen the lock, turn the screw in a clockwise direction and then tighten the locknut.

3. Wirefinder.

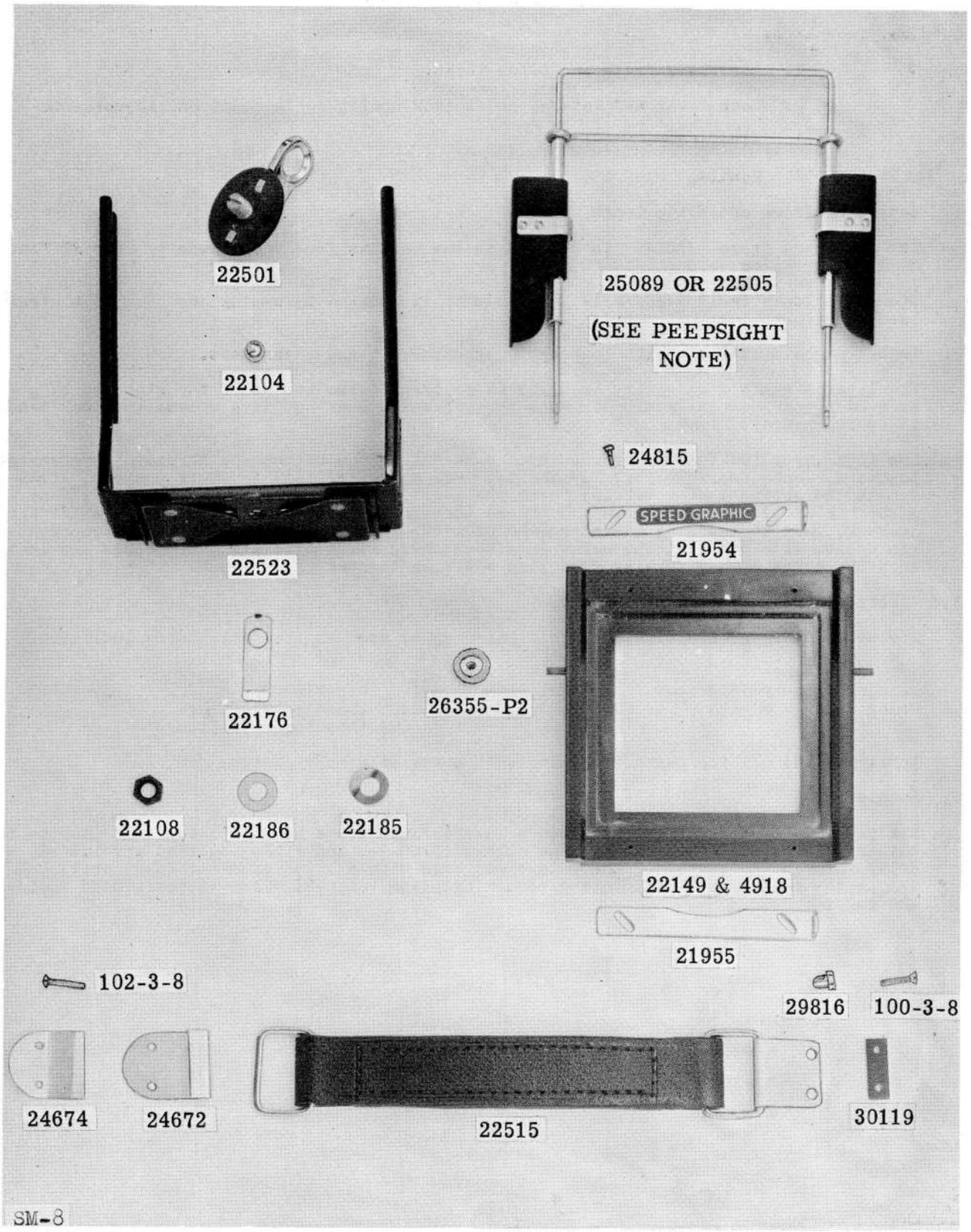
The wirefinder and peepsight combinations must be used as the table below indicates.

Peepsight	Wirefinder
Folding sight #22513	#22505 (bushing 2¼" long)
Swing sight #22196	#25089 (bushing 2-5/8"long)

Lubricate the sliding parts by wiping with a wax base lubricant.

4. Handle.

Early models of this camera use wood screws to secure the handle plates. To use the retaining plates, (#25096) and machine screws (#100-3-8 and #102-3-8) that are listed, drill through the center of the wood screw hole with a .099" diameter (#39) drill and assemble the machine screws into the retaining plate (#25096) which is positioned inside the case.


22501
22104
22523
25089 OR 22505
(SEE PEEPSIGHT NOTE)
24815
SPEED GRAPHIC
21954
22176
26355-P2
22149 & 4918
22108
22186
22185
21955
102-3-8
29816
100-3-8
24674
24672
22515
30119
SM-8

		List Price
22520	FRONT COMPLETE (Includes 22503, 22519 and 26355-P2)	$16.00
22503	Standard Complete (Includes seven items below)	10.50
22104	Ball - Front standard lock	.04
22108	Nut - Front standard screw	.04
22176	Spring - Shift lock	.40
22185	Washer - Front standard spring	.04
22186	Washer - Front standard flat	.01
22501	Lever (lock) assembly	1.90
22523	Standard assembly	8.60
22519	Lensboard Frame Assembly (Includes five items below)	3.50
4918	Pin - Slide lock centering	.01
21954	Slide Lock - upper	.45
21955	Slide Lock - lower	.35
22149	Frame (with inserts) (order pin 4918)	2.60
24815	Screw - Slide lock	.10
26355-P2	Nut - Rising Front Lock (Order replacement)	See below
22505	WIRE FINDER (Use with folding peepsight 22513)	4.20
25089	WIRE FINDER (Use with swinging peepsight 22196)	4.20
22515	HANDLE ASSEMBLY (non-adjustable)	3.90
	PARTS FOR ATTACHING HANDLE ASSEMBLY (22515)	
100-3-8	Screw - Handle lug (1/2" 3-48 FH-P19)	.03
102-3-8	Screw - Handle catch (1/2" 3-48 RH-P19)	.03
24672	Catch - Handle	.25
24674	Spring - Handle catch	.25
25096	Plate - Handle reinforcement (Tapped for #3-48 Thread) (See 30119)	.20
29816	Nut - Acorn (Use with plate 30119)	.05
30119	Plate - Handle reinforcement (Not tapped. Use with acorn nut)	.20
	SUBSTITUTE REPLACEMENT PARTS	
Parts as listed	Order as Replacement	
26355-P2	30444-P1 Nut Rising Front Lock	.25

Order by part number and complete name. State quantity.

Prices are subject to change without notice.

193-355

GRAPHIC Back

Special precautions for:

1. Focusing panel springs
2. Ground glass replacement (also panel catch)
3. Panel door spring (also panel door)
4. Panel door shields
5. Peepsight
6. Back lugs and screws
7. Graflok Back

1. Focusing panel springs.

NOTE: The bottom and top focusing panel springs (#22579 and #22580) are not interchangeable - to determine, position the ear with elongated slot on the right and lastly, the straight edge will be to the center.

The springs are secured to the focusing panel at each end by a #1 x 3/8" round head screw (#151B1-6); in turn, the panel and springs are secured to the back by a #4-40 x 1/4" round head screw (#20608) inserted through the center hole of the spring, through a washer, part #15851, and into the back moulding bushing.

2. Ground glass replacement (also panel catch).

a. Open the panel door and on each side remove the metal side shield retaining strip (#1958) which is secured by four #0 x 3/8" flat head screws (#150B0-3).

b. At this point, check catch, panel wing shield and door spring for replacement.

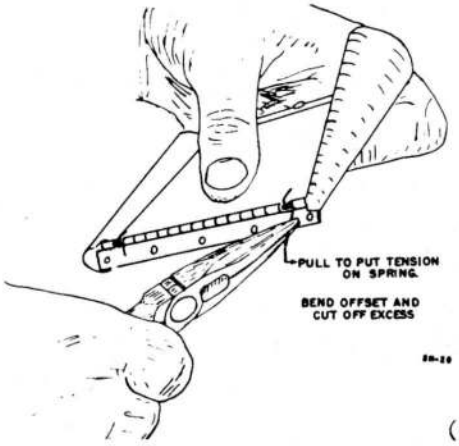
c. Position the ground glass screen (#3106) with the grain surface toward the lens. Clinch the panel wings beneath the retaining strips and tighten the screws uniformly to avoid cracking the glass.

3. Panel door spring (also panel door).

a. To replace either of the panel door springs (#845) it will be necessary to remove the door from the focusing frame. Proceed by removing the retaining strip (#1958) from each side of the ground glass; then, lift the leather covering at the hinge and remove four #1 x 1/4" flat head hinge screws (#150B1-4).

b. Drive out the hinge pin to remove broken spring. Position the new spring so that the straight ends extend inward without tension. Grasp one straight end and pull 1/8" - 1/4" to place tension on the spring. If the tension is sufficient to lift the door, form offset on each terminal so that it will lay flat against the hinge; then, cut off excess of 3/16".

c. Reassemble the door, check side binding and the catch and, if necessary, adjust the catch arch before reassembling the ground glass.



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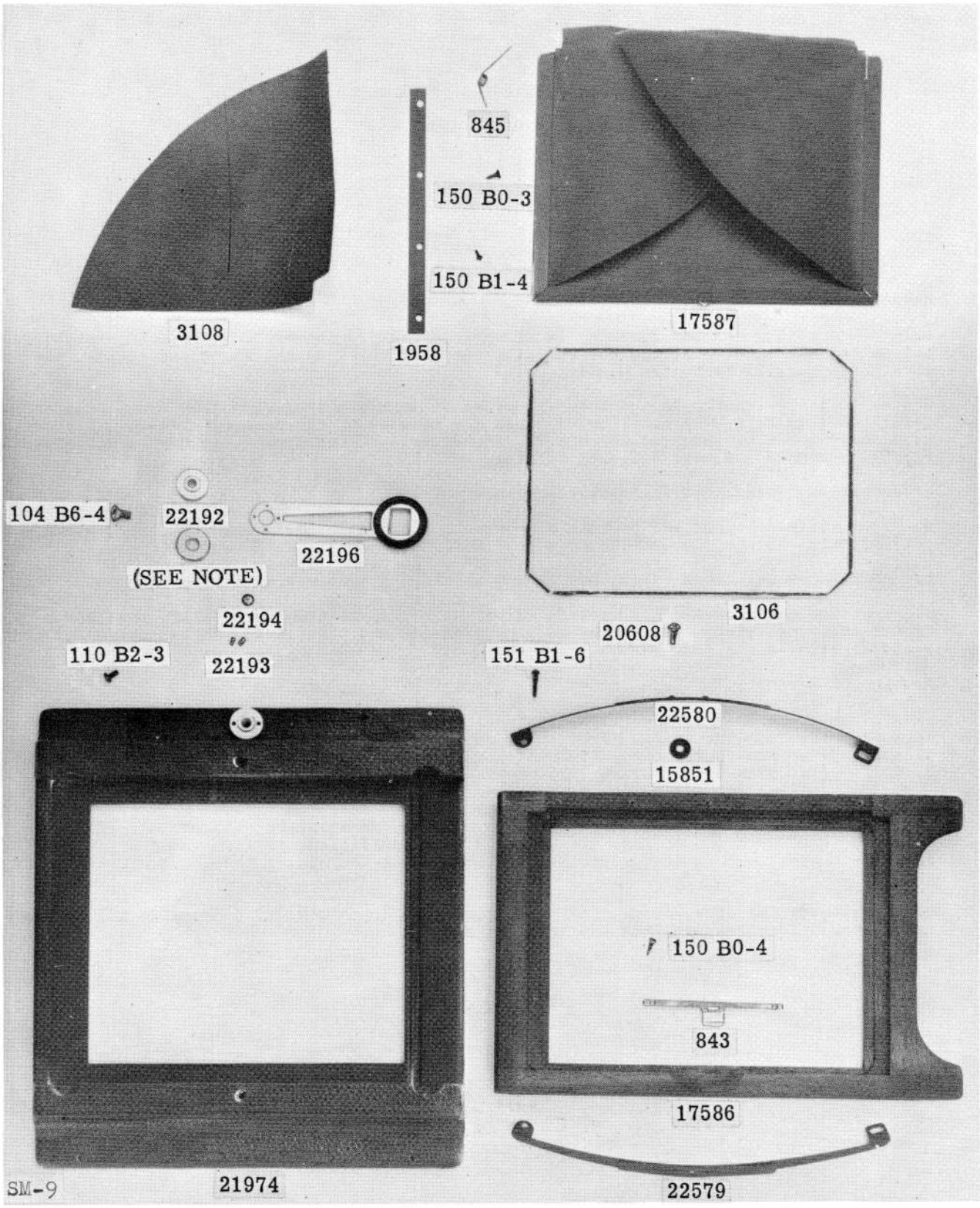

3108
845
150 B0-3
150 B1-4
1958
17587
104 B6-4
22192
22196
(SEE NOTE)
22194
110 B2-3
22193
3106
20608
151 B1-6
22580
15851
150 B0-4
843
17586
21974
22579
SM-9

		List Price
Cat. No. 9111	GRAPHIC BACK COMPLETE (Includes 17588 and 22756) (Obsolete, replaced by Graflok Back Cat. No. 9298)	See below
	Order the following parts for replacement only:	
17588	FOCUS FRAME ASSEMBLED (Includes the fourteen parts listed below)	$9.25
150 BO-3	Screw - ground glass retaining strip (3/16" #0 FH L5)	.01
150 BO-4	Screw - catch to frame (1/8" #0 FH P22)	.01
150 B1-4	Screw - hinge panel to frame (1/4" #1 FH L17)	.01
151 B1-6	Screw - spring to frame (3/8" #1 RH L5)	.01
843	Catch - panel (Use screw 150 BO-4)	.15
1958	Retaining strip - glass (Use screw 150 BO-3)	.13
3106	Ground glass - focusing	.85
17520	Covering (Frame and panel assembly)	.75
17586	Frame (wood) (not leather covered)	2.70
17587	Panel door assembly (not leather covered)	Not Procurable
845	Spring - panel door	.08
3108	Shield - panel wing	.15
22579	Spring assembly - bottom of focusing panel	.44
22580	Spring assembly - top of focusing panel	.44
22756	BACK FRAME ASSEMBLY	
Cat. No. 9107	SWINGING PEEPSIGHT (Includes first five items below)	
104 B6-4	Screw peepsight (1/4" #6-32 OH P16)	.02
22192	Cap - peepsight (specify type - see page 4)	.19
22193	Spring - peepsight	.04
22194	Ball - peepsight	.02
22196	Peepsight	.48
21974	Back Frame	7.85
110 B2-3	Screw - back to body (3/16" #2-56 Bind H L19)	.01
15851	Washer - spring screw	.03
20608	Screw - panel spring to back (1/4" 4-40 RH P22)	.01
Cat. No. 9298	GRAFLOK BACK COMPLETE - 4 x 5 (with Ektalite)	See Price List

Refer to Section 5 to order parts, except for the following items:

Pacemaker Part as Listed	Order this Anniversary Part	
30921-P6 (figure 8-2)	110 B2-3 Screw - Upper mounting (3/16" #2-56 Bind H)	.01
30921-P7 (figure 8-1)	110 B2-3 Screw - Lower mounting (3/16" #2-56 Bind H)	.01

Order by part number and complete name. State quantity.

193-355

Prices are subject to change without notice.

4. Panel wing shields.

a. To replace a panel wing shield (#3108) remove the corresponding retaining strip and pry up the metal lip of the door slightly.

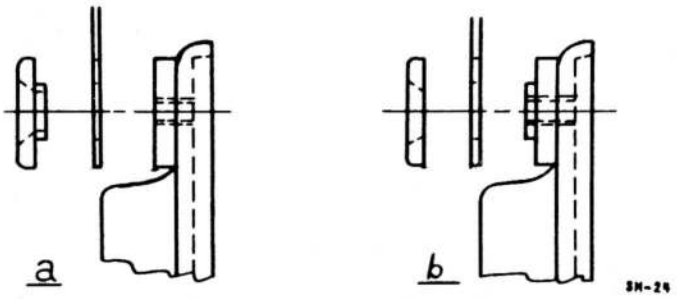
b. Clean the metal opening; apply cement 3/16" wide to both sides of one straight edge; insert this cemented edge in the lip and peen the lip which clamps the new shield.

c. Replace the retaining strip.

5. Peepsight.

Remove the peepsight screw (#104B6-4) and clean the cap (#22192), peepsight (#22196), balls (#22194), springs (#22193) and the back bushing with cleaning solvent. Stretch the springs slightly, lubricate the bearing faces of the peepsight with a wax base lubricant and reassemble.

NOTE: Cap (#22192) should be ordered to accommodate the peepsight bushing surface of the back. The cap has been made with and without the bearing shoulder. The cap and back of figure a is currently supplied; the cap of figure b will be supplied only on request.



6. Back lugs and screws.

If the threads of the back lugs, positioned in the camera body beneath the leather, should be stripped by over turning or cross-threading the back screw (#110B2-3) it will be necessary to retap the lug with a #3-48 tap and use a #3-48 x 3/16" oval binding head screw. (Order screw #112B3-3, s-18 finish; or cut off handle catch screw to 3/16" long.)

7. Graflok Back.

a. Refer to Section 6 for disassembly and reassembly of the Graflok Back.

b. Descriptions of mounting screws, shown in figure 4-1 and 4-2 in Section 6, are not accurate descriptions of screws used on the Anniversary Back. See parts list of this section.

Focal Plane Shutter

Special precautions for:

1. Curtain setting plate
2. Tension setting plate
3. Curtain and roller replacement

Special tools: Tension setting clamp, #28452

Tension lock nut wrench, #28442

All metal parts of the shutter plates may be immersed in cleaning solvent - dry before reassembly and lubricating as recommended below. Remove excess lubricant and never allow any lubrication to come in contact with shutter curtain.

1. Curtain setting plate, (#24780).

a. Remove the back.

NOTE: Set the curtain at "0" (full open aperture) and mark the position of the top curtain strut on one side of the camera body.

b. From the curtain setting plate, remove the five #1 x 1/4" oval head screws (#152B1-4). Note any spacer washers (#20600) that may be placed at either end of the roller.

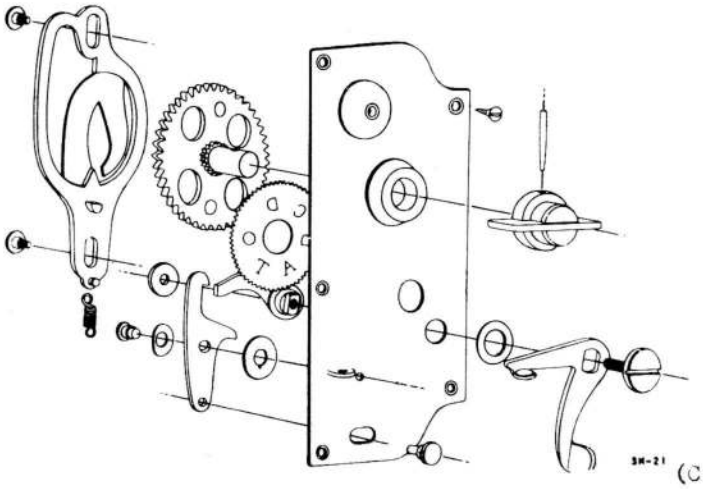
c. If it is ever necessary to remove the release lever (#22015) file off the peened end of the release lever screw (#24665). Reassemble, peen nut, and check for binding of bushing or over tightened screw.

d. Check brake spring of the escapement (#3388) in respect to its latch of the master gear stop pin. Hold the shutter release lever back and rotate the winding key until the stop pin snaps beneath the flat spring and against the escapement -- it should not be possible to reverse the winding key and force the stop pin back under the catch end of the flat spring. This spring should latch about 1/64" below the top of the pin. If it has been necessary to remove the escapement screws (#867) apply a touch of glyptol cement to the threads before assembly.

e. Lubricate the mastergear stop pins with wax base lubricant, and lubricate the curtain roller bearings and pinion with graphite grease.

f. Set the curtain setting plate so that "0" appears squarely in the indicating hole when the top gear stop pin is stopped against the escapement.

g. Wind the curtain so that its top strut lines up with the index mark on the side of the body. Hold the winding key against the stop and reposition the plate; check the side play of the roller and if more than 1/64" use spacer washer (#20600) at the case bearing end of the shaft. Reassemble two screws, test run, check the top strut and index, if satisfactory, wind the curtain and release -- note the position of each curtain strut in relation to the inside frame. If necessary, adjust by raising or lowering the pinion gear one tooth at a time.



SM-21

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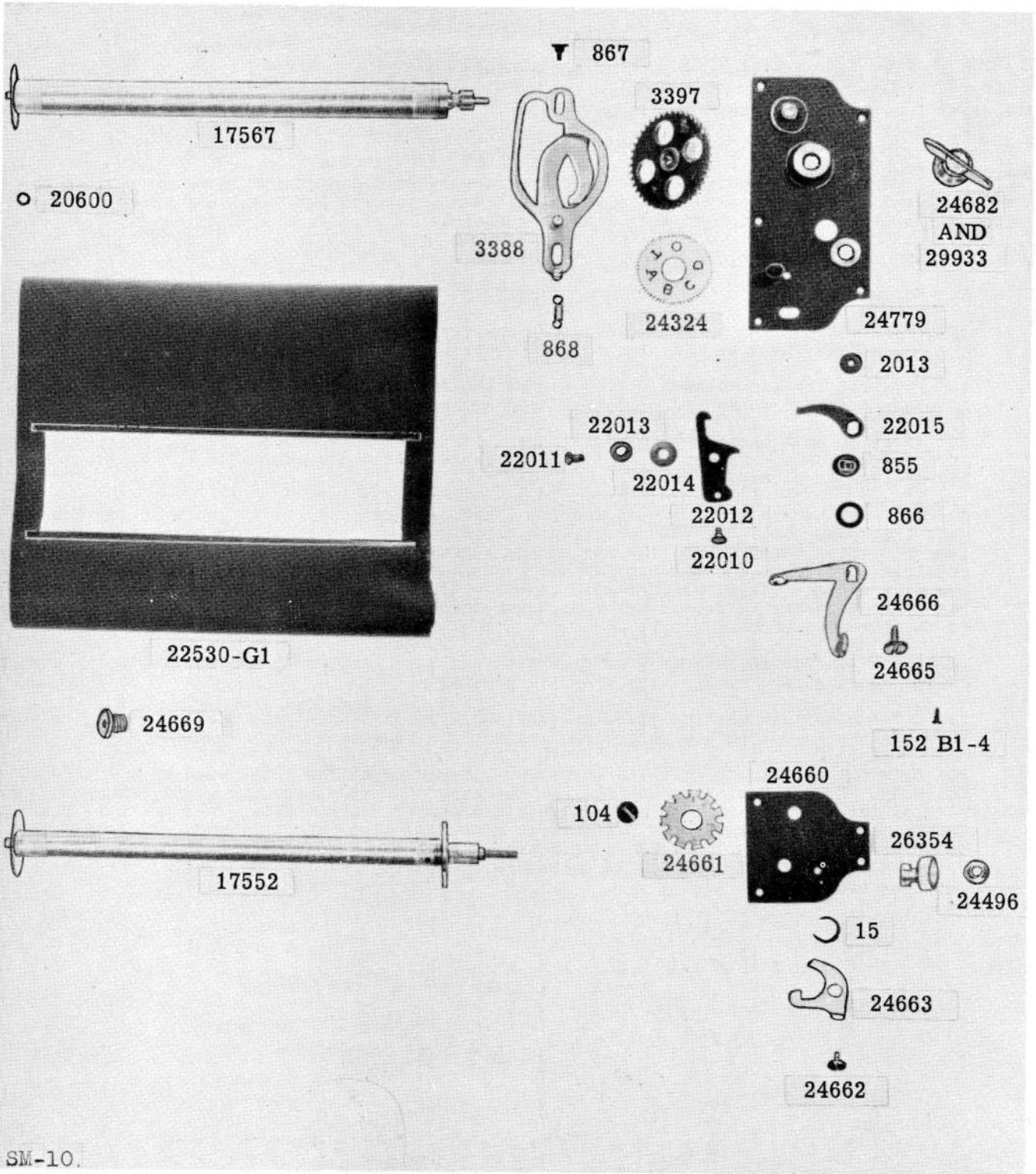

867
17567
3397
20600
3388
24682
AND
29933
24324
24779
868
2013
22013
22015
22011
855
22014
22012
866
22010
24666
24665
22530-G1
24669
152 B1-4
24660
104
24661
26354
24496
17552
15
24663
24662

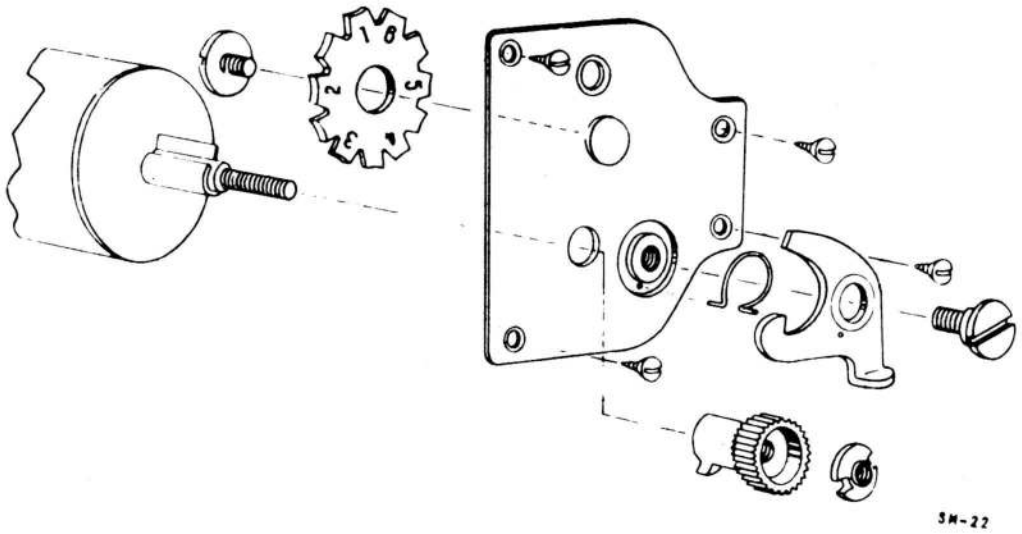
		List Price
24664	TENSION SETTING PLATE ASSEMBLY	$2.40
15	Spring - tension dog	.08
104	Screw - tension indicator gear	.15
24496	Nut - tension snail lock	.20
24660	Plate - tension (order tension setting plate assembly 24664)	--
24661	Gear - tension indicator	.50
24662	Screw - tension dog	.08
24663	Dog - tension	.30
26354	Snail - tension plate setting	.40
152 B1-4	Screw - plate to body (1/4" #1 OH L5)	.03
24780	CURTAIN SECTING PLATE ASSEMBLY	9.80
855	Bushing - shutter release (order 2013 and 24665)	.15
866	Washer - release	.05
867	Screw - escapement	.05
868	Spring - escapement	.15
2013	Nut - escapement lever (order 855 and 24665)	.12
3388	Escapement Assembly	.40
3397	Gear - master	1.75
22010	Button - shutter lock	.10
22011	Stud screw - latch lock	.05
22012	Latch - shutter lock (order 22010)	.10
22013	Washer - escapement (spring washer)	.03
22014	Washer - lock	.03
22015	Lever - escapement (order 855, 2013 and 24665)	.10
24324	Gear - curtain slit indicator	.50
24665	Screw - release lever (order 855 and 2013)	.05
24666	Lever - shutter release (order 855, 2013 and 24665)	.25
24682	Winding key	.50
24779	Plate - setting (order curtain setting plate assembly 24780)	--
29933	Pin - winding key	.01
152 B1-4	Screw - plate to body (1/4" #1 OH L5)	.03
30086	CURTAIN AND ROLLER ASSEMBLY	$9.85
17552	Roller assembly - tension	2.20
17567	Roller assembly - gear	1.75
22530 G1	Curtain assembly	4.85
20600	Spacer washer - curtain roller	.01
24669	Bearing - roller	.35

Reassemble the back (with the focusing panel removed), set the curtain slit at "A" and set the tension at "1". Release the curtain and note if it rebounds at the lower edge of the opening - this fault may be corrected by dropping the upper roller gear one tooth off the plate gear.

2. Tension setting plate (#24664).

a. The tension dog spring (#15) may be replaced without removal of the plate.

b. If the entire plate is to be removed, use the special tension lock nut wrench and pliers to remove the tension snail lock nut (#24496). The tension snail (#26354) may now be unscrewed from the tension roller shaft - it may be necessary to wind the tension to "6" before the tension snail can be unscrewed. At this point the four #1 x 1/4" oval head screws (#152B1-4) are removed and the plate lifted from the camera body.



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c. Lubricate the case and plate bearing points of the tension roller shaft with graphite grease; and, lubricate the internal tension spring with a few drops of light oil inserted through the left end (see paragraph 3C).

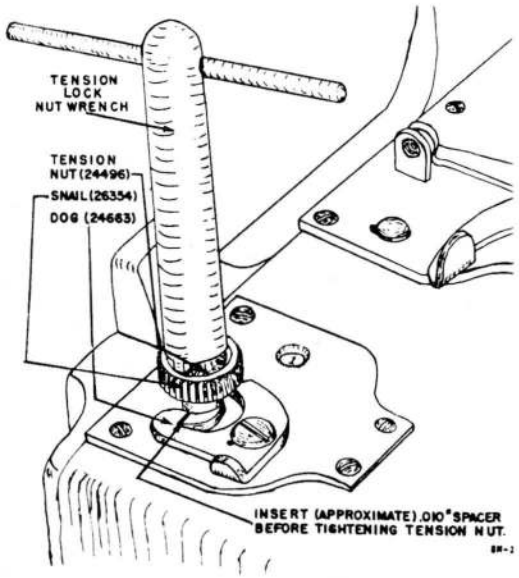
d. Reassemble the tension setting plate over the threaded end of the shaft and lock the tension setting clamp to the shaft. Check side play of the roller and if more than 1/64", use spacer washer (#20600) at the case bearing end of the shaft. Wind the spring several turns and then draw the curtain out by hand several times to remove curtain slack. Slowly release the tension - do not allow the tension setting clamp to spin free. Lift the tension plate; set the indicator gear so that "I" appears in the indicator hole; turn the one tooth of the pinion clockwise from the vertical about 30 degrees and now engage the counter gear and the one tooth pinion. If it is not possible to wind the tension to "2" the pinion and gear are not properly engaged - repeat and vary the 30 degree suggestion slightly.

e. With the tension setting clamp, wind the tension to "6"; hold the tension; lift the plate and reset the counter to "1". Check for correct mesh of pinion and indicator gear - then assemble two screws. Remove the tension setting clamp and rethread the tension snail to the shaft. Screw the snail down until it binds on the plate - then, back off a partial turn until the dog and snail catches engage. Insert spacer (.005" to .010") between the catches, assemble the tension nut and tighten. Check the snail for binding on the plate - if necessary, loosen the locknut and back off snail a full turn, tighten lock nut again and check. Test run several times at high and low tension; then, set tension at "I" and the curtain at "0" invert the camera and release the shutter - the curtain should roll slowly and evenly to the roller and latch with release lever held back - if not, it will be necessary to add more tension - one turn at a time until the shutter operates inverted. This additional tension may be added by removing the plate mounting screws and rotating the plate counterclockwise without disengaging the pinion and indicator gear. Check operation as instructed in paragraph 1 g. Reassemble the four screws when tension is satisfactory.

3. Curtain and roller replacement.

a. If the curtain and rollers are not being replaced as a unit, remove all old cement from the rollers and rough the curtain, and be sure that the ends of the curtains are square which will facilitate in keeping the curtain ends as nearly parallel as possible to the longitudinal axis of the rollers when the parts are cemented together. Examine the curtain for pinholes, tears or weak points.

b. For information of assembly and lubrication of the curtain and tension setting plates, see corresponding paragraphs 1 and 2.

c. Examine the tension roller spring by unscrewing the left bushing, then unscrew the right bushing. Lubricate spring very lightly with recommended light oil or replace tension roller if the spring is badly worn.

d. After the new curtain or roller has been replaced and adjusted, it is additionally cemented to the roller. The top gear roller is set at "0" and released, a line is drawn across the center of the roller which will mark a guide on the inside surface of the curtain. Cement is applied 1/2" wide on this guide line. The lower tension roller is marked with a guide line after the smallest aperture has been wound on the top roller - cement is applied 1/2" wide on this guide line. Reassemble the back and check.